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# FLOOD INSURANCE STUDY

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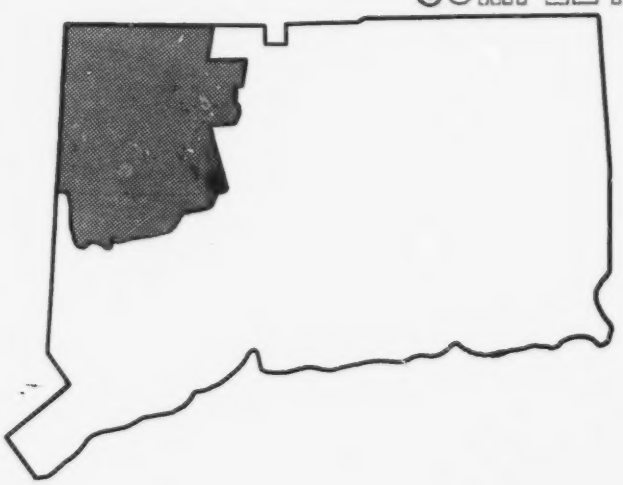

## TOWN OF PLYMOUTH, CONNECTICUT
### LITCHFIELD COUNTY

APRIL 15, 1982

Federal Emergency Management Agency

COMMUNITY NUMBER - 090138

TABLE OF CONTENTS


| | | Page |
|---|---|---|
| 1.0 | INTRODUCTION | 1 |
| | 1.1 Purpose of Study | 1 |
| | 1.2 Authority and Acknowledgements | 1 |
| | 1.3 Coordination | 1 |
| 2.0 | AREA STUDIED | 2 |
| | 2.1 Scope of Study | 2 |
| | 2.2 Community Description | 2 |
| | 2.3 Principal Flood Problems | 4 |
| | 2.4 Flood Protection Measures | 4 |
| 3.0 | ENGINEERING METHODS | 6 |
| | 3.1 Hydrologic Analyses | 7 |
| | 3.2 Hydraulic Analyses | 8 |
| 4.0 | FLOOD PLAIN MANAGEMENT APPLICATIONS | 9 |
| | 4.1 Flood Boundaries | 9 |
| | 4.2 Floodways | 9 |
| 5.0 | INSURANCE APPLICATION | 10 |
| | 5.1 Reach Determinations | 13 |
| | 5.2 Flood Hazard Factors | 15 |
| | 5.3 Flood Insurance Zones | 15 |
| | 5.4 Flood Insurance Rate Map Description | 16 |




BEST DOCUMENT AVAILABLE

TABLE OF CONTENTS - continued


| | Page |
|---|---|
| 6.0 OTHER STUDIES | 16 |
| 7.0 LOCATION OF DATA | 16 |
| 8.0 BIBLIOGRAPHY AND REFERENCES | 16 |


FIGURES


| | |
|---|---|
| Figure 1 - Vicinity Map | 3 |
| Figure 2 - Potential Flood Heights on the Pequabuck River in Plymouth | 5 |
| Figure 3 - Potential Flood Heights on the Pequabuck River in Plymouth | 5 |
| Figure 4 - Potential Flood Heights on the Pequabuck River in Plymouth | 6 |
| Figure 5 - Floodway Schematic | 13 |


TABLES


| | |
|---|---|
| Table 1 - Summary of Discharges | 7 |
| Table 2 - Floodway Data | 11 - 12 |
| Table 3 - Flood Insurance Zone Data | 14 |


EXHIBITS


Exhibit 1 - Flood Profiles

| | |
|---|---|
| Pequabuck River | Panels 01P-05P |
| Poland River | Panels 06P-09P |

Exhibit 2 - Flood Boundary and Floodway Map Index

Exhibit 3 - Flood Boundary and Floodway Map




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TABLE OF CONTENTS - continued

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index

Flood Insurance Rate Map



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FLOOD INSURANCE STUDY
TOWN OF PLYMOUTH, CONNECTICUT

# 1.0 INTRODUCTION

## 1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Plymouth, Litchfield County, Connecticut, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Plymouth to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

## 1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by Philip W. Genovese and Associates for the Federal Emergency Management Agency, under Contract No. H-4711. This work was completed in May 1980.

## 1.3 Coordination

In April 1978, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives of the FEMA, the Town of Plymouth, and Philip W. Genovese and Associates (the study contractor). During the course of the study, the Soil Conservation Service (SCS) and Anderson-Nichols Co. were contacted for pertinent information. On April 29, 1981, the results of the study were reviewed at a final CCO meeting attended by representatives of the FEMA, the town, and the study contractor.



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## 2.0 AREA STUDIED

### 2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Plymouth, Litchfield County, Connecticut. The area of study is shown on the Vicinity Map (Figure 1).

The Pequabuck River from the downstream corporate limits to Preston Road, the Poland River from its confluence with the Pequabuck River to just downstream of the dam located approximately 400 feet upstream of Poland Brook Road, and the Naugatuck River, which is located outside the corporate limits, were studied by detailed methods. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through May 1985.

Todd Hollow Brook, Hancock Brook, Minor Pond, Terryville Reservoir No. 3, Bristol Reservoir No. 7, Zeiner Pond, Thomaston Reservoir, Wilton Pond, Tomlinson Pond, Lake Plymouth, Brophy Pond, Fall Mountain Lake, Marino Pond, and numerous unnamed ponds and swamps were studied by approximate methods. The remaining portions of the Pequabuck River and the Poland River were also studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FEMA.

### 2.2 Community Description

The Town of Plymouth is located in the southeastern portion of Litchfield County in northwestern Connecticut. It is bordered by the Town of Harwinton to the north, the City of Bristol to the east, the Town of Wolcott and the City of Waterbury to the south, and the Town of Thomaston to the west. The 1970 population of Plymouth was 10,321 and was estimated to be 11,000 in 1978 (References 1 and 2).

Plymouth is a semi-rural town with most of its population centered around U. S. Route 6, which is the main east-west road through the town. Both the Pequabuck River and the Poland River contain a number of reservoirs owned by the Bristol and Terryville Water Companies. Consequently, much of this rolling, forested land has remained undeveloped due to its use as a water-supply watershed. It has only been near the population centers of Plymouth and Terryville that these watercourses have been subject to development. The annual precipitation in Plymouth averages 47 inches, with runoff accounting for 24 inches of that figure (Reference 3).



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FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

**TOWN OF PLYMOUTH, CT**
**(LITCHFIELD CO.)**

APPROXIMATE SCALE

4 0 4 8 12 MILES

**VICINITY MAP**

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## 2.3 Principal Flood Problems

Although most of the past floods were the result of large amounts of rainfall, the area is susceptible to floods from snowmelt in combination with rain. There has been little problem with flooding in the upper watersheds of the rivers because of the sparse development and the fact that they are used for water supply. However, the lower, more urbanized reaches have been subject to flooding.

The August 18-19, 1955, storm caused the flood of record in the Pequabuck River watershed, with a peak flow at the gage in Forestville of 11,700 cubic feet per second (cfs) (Reference 4). The SCS has estimated that flood at a frequency between 50 and 100 years with a peak discharge of 2,500 cfs at U. S. Route 6 in Terryville (Reference 5). The U. S. Army Corps of Engineers (COE) reported that during the 1955 storm, large quantities of debris blocked the upper portion of Main Street Bridge and caused floodwaters to reach a level 2 to 3 feet above the road and adjacent business district. This caused the bridge to be partially destroyed, and flood damage was reported at approximately 10 industrial and commercial sites and 12 residences (Reference 6).

The SCS reported that floods occurred in April and September 1977 and January 1979. The location of major damage in the Pequabuck River watershed usually extends from the now defunct Eagle Lock Company to the U. S. Route 6 highway bridge. This flooding affects a number of small commercial and industrial properties and some residences further upstream (Reference 5).

Figures 2, 3, and 4 show potential flood heights on the Pequabuck River at three locations in the Town of Plymouth.

## 2.4 Flood Protection Measures

In 1978, the Connecticut legislature appropriated $170,000 for the construction of flood control improvements in the central business district of Terryville. These improvements included the reconstruction of the upper portion of Main Street Bridge, the demolition of a dwelling immediately upstream of the bridge, and channel modifications. This work should help to minimize flooding in this stretch of the river (Reference 6).

The SCS had been exploring the possibility of a flood control structure to be located upstream of the area that suffers most of the flood damage, but it now appears that the cost-benefit ratio may not justify it. Even if it is economically justified, the money for the detailed design of the structure, land purchases, and construction of the structure have not been appropriated and, therefore, construction is unlikely to begin in



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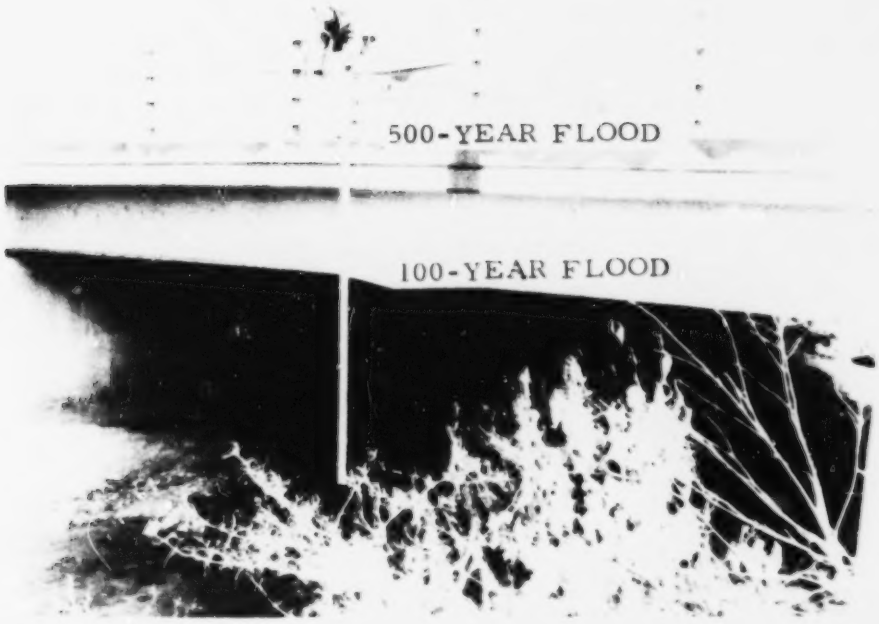


Figure 2 - Potential 100- and 500-year flood heights on the Pequabuck River at the bridge on U. S. Route 6 near State Route 72.

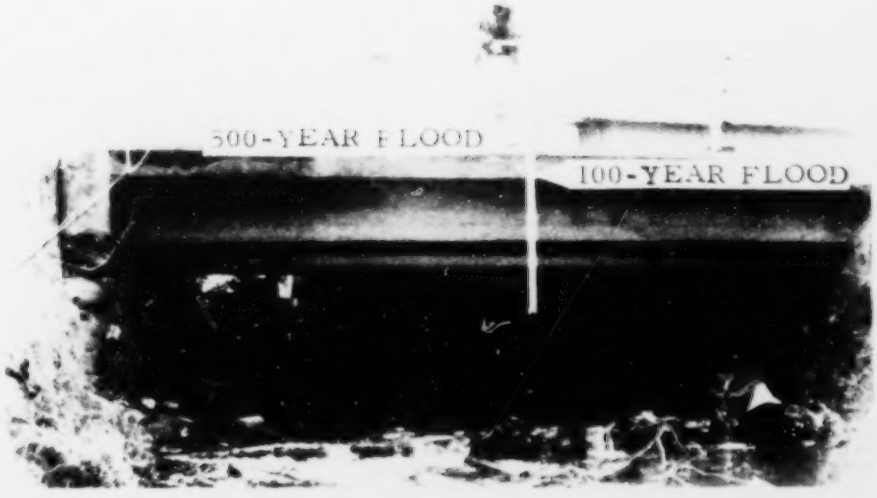


Figure 3 - Potential 100- and 500-year flood heights on the Pequabuck River at the bridge on U. S. Route 6.



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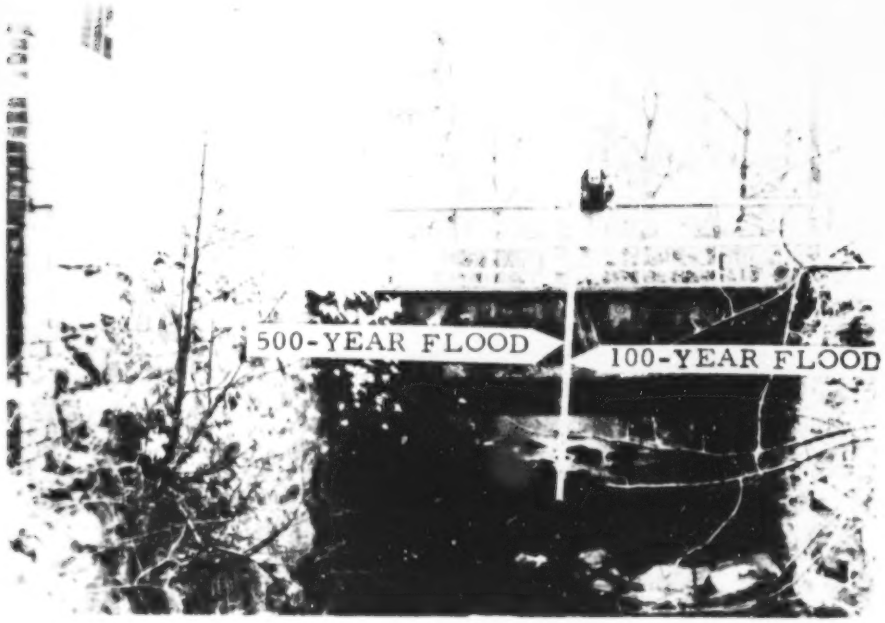


Figure 4 - Potential 100- and 500-year flood heights on the Pequabuck River at the bridge on U. S. Route 6 and Eagle Street.

the next five years. Several small dams exist along the Pequabuck River and the Poland River, but they do not provide significant flood protection to the community.

## 3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one-percent chance of annual occurrence) in any 50-year period is about 40 percent (four in ten) and, for any 90-year period, the risk



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increases to about 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

Peak discharges for the Pequabuck River and the Poland River were determined using the L. A. Weiss method, which is the accepted method for determining flood flows on non-gaged streams in Connecticut (Reference 7). The method is the result of a log-Pearson Type III regression analysis performed on 107 stream gaging stations throughout Connecticut. The gaging stations have a mean record length of 34 years and are supplemented by close to 200 years of historic information. From this information, a skew and standard deviation for each of the gaging stations was calculated and a summary map of these parameters for the State of Connecticut was developed. The statistical information was used in conjunction with watershed parameters (channel slope, stream length, drainage area, rainfall intensity, and percent of impervious areas) to arrive at peak discharges for the Pequabuck River and the Poland River. U. S. Geological Survey (USGS) topographic maps covering the study area were the source used for the measurement of the watershed parameters (Reference 8).

A summary of drainage area-peak discharge relationships for the Pequabuck River and the Poland River is shown in Table 1, "Summary of Discharges".

TABLE 1 - SUMMARY OF DISCHARGES

| FLOODING SOURCE AND LOCATION | DRAINAGE AREA (sq. miles) | PEAK DISCHARGES (cfs) 10-YEAR | 50-YEAR | 100-YEAR | 500-YEAR |
|---|---|---|---|---|---|
| PEQUABUCK RIVER | | | | | |
| At the downstream corporate limits | 15.06 | 1,390 | 2,610 | 3,335 | 5,450 |
| At the confluence of the Poland River | 3.71 | 430 | 1,050 | 1,190 | 1,710 |
| POLAND RIVER | | | | | |
| At the confluence with the Pequabuck River | 10.22 | 920 | 1,715 | 2,470 | 3,560 |
| Upstream of North Main Street | 6.87 | 625 | 1,160 | 1,665 | 2,395 |



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Data on the flooding from the Naugatuck River, which affects the northwest portion of the town, was taken from the Flood Insurance Study for the Town of Thomaston (Reference 9). The elevations for the Naugatuck River behind Thomaston Dam, which is located in the Town of Thomaston, for the selected recurrence intervals are as follows:

10-year flood - 461.2 feet
50-year flood - 483.0 feet
100-year flood - 496.0 feet
500-year flood - 499.0 feet

## 3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE Hec-2 step-backwater computer program (Reference 10). Starting water-surface elevations for the Pequabuck River were determined from the Pequabuck River profile in the Flood Insurance Study for the City of Bristol (Reference 11). Starting water-surface elevations for the Poland River were determined using the slope-area method.

Channel roughness factors (Manning's "n") used in the hydraulic computations were determined through field inspection. The channel "n" values for the Pequabuck River ranged from 0.035 to 0.045, and the overbank "n" values ranged from 0.030 to 0.075. The channel "n" values for the Poland River ranged from 0.035 to 0.045, and the overbank "n" values ranged from 0.040 to 0.075.

Cross-section data were obtained from previous reports, field survey data, and aerial photographs taken in April 1978 (References 5, 12, and 13). All bridges, dams, culverts, and floodwalls were field surveyed in 1979 to obtain elevation data and structural geometry.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3).



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All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in the study are shown on the maps.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are valid only if hydraulic structures remain unobstructed, and dams do not fail.

## 4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

### 4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:4,800 with a contour interval of 5 feet (Reference 13). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the areas studied by approximate methods, the boundary of the 100-year flood was delineated using USGS topographic maps and the Flood Hazard Boundary Map for the Town of Plymouth (References 8 and 14).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

### 4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a



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floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plains. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 5.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "With Floodway" elevations presented in Table 2 for certain downstream cross sections of the Poland River are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

The 100-year flood boundaries delineated in the area of the Thomaston Dam and Resevoir are COE easements and are not to be encroached upon. Therefore in Plymouth, a floodway has been delineated in the area of the dam coincident with the 100-year flood boundary.

## 5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard



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| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FT.) | SECTION AREA (SQ. FT.) | MEAN VELOCITY (F.P.S.) | REGULATORY (NGVD) | WITHOUT FLOODWAY (NGVD) | WITH FLOODWAY (NGVD) | INCREASE (FEET) |
| Pequabuck River | | | | | | | | |
| A | 390 | 48 | 368 | 9.1 | 517.8 | 517.8 | 517.8 | 0.0 |
| B | 1,525 | 50 | 298 | 11.2 | 533.8 | 533.8 | 533.8 | 0.0 |
| C | 1,715 | 21 | 193 | 17.2 | 542.7 | 542.7 | 542.7 | 0.0 |
| D | 2,575 | 64 | 290 | 11.5 | 555.5 | 555.5 | 555.5 | 0.0 |
| E | 2,708 | 73 | 291 | 11.5 | 557.8 | 557.8 | 557.8 | 0.0 |
| F | 3,213 | 65 | 443 | 7.5 | 566.7 | 566.7 | 566.7 | 0.0 |
| G | 4,193 | 49 | 268 | 12.5 | 581.6 | 581.6 | 581.6 | 0.0 |
| H | 6,458 | 40 | 402 | 6.1 | 587.9 | 587.9 | 588.0 | 0.1 |
| I | 8,383 | 35 | 154 | 7.8 | 590.0 | 590.0 | 590.4 | 0.4 |
| J | 12,061 | 28 | 108 | 11.0 | 633.5 | 633.5 | 633.5 | 0.0 |
| K | 12,280 | 22 | 116 | 10.3 | 635.8 | 635.8 | 636.6 | 0.8 |
| L | 12,620 | 28 | 106 | 11.2 | 651.7 | 651.7 | 651.7 | 0.0 |
| M | 13,379 | 44 | 370 | 3.2 | 661.9 | 661.9 | 662.8 | 0.9 |
| N | 14,519 | 208 | 976 | 1.2 | 662.7 | 662.7 | 663.6 | 0.9 |
| O | 14,639 | 155 | 1,444 | 0.8 | 668.3 | 668.3 | 669.2 | 0.9 |
| P | 15,839 | 26 | 104 | 11.5 | 671.8 | 671.8 | 671.8 | 0.0 |
| Q | 15,910 | 138 | 624 | 1.9 | 687.3 | 687.3 | 688.0 | 0.7 |
| R | 16,987 | 112 | 395 | 3.0 | 689.0 | 689.0 | 689.6 | 0.6 |
| S | 18,157 | 54 | 201 | 5.9 | 693.1 | 693.1 | 693.4 | 0.3 |

[1]Feet above corporate limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

**TOWN OF PLYMOUTH, CT**
(LITCHFIELD CO.)

**FLOODWAY DATA**

**PEQUABUCK RIVER**

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| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE | WIDTH (FT.) | SECTION AREA (SQ. FT.) | MEAN VELOCITY (F.P.S.) | REGULATORY (NGVD) | WITHOUT FLOODWAY (NGVD) | WITH FLOODWAY (NGVD) | INCREASE (FEET) |
| Pequabuck River | | | | | | | | |
| T | 20,397[1] | 75 | 157 | 7.6 | 704.8 | 704.8 | 704.8 | 0.0 |
| U | 21,578[1] | 55 | 295 | 4.0 | 738.7 | 738.7 | 738.8 | 0.1 |
| Poland River | | | | | | | | |
| A | 600[2] | 468 | 1,176 | 2.1 | 589.1 | 588.0[3] | 589.0 | 1.0 |
| B | 4,069[2] | 44 | 178 | 9.4 | 602.5 | 602.5 | 602.8 | 0.3 |
| C | 5,091[2] | 27 | 178 | 9.3 | 608.1 | 608.1 | 608.5 | 0.4 |
| D | 6,771[2] | 137 | 340 | 4.9 | 621.2 | 621.2 | 621.7 | 0.5 |
| E | 9,172[2] | 24 | 155 | 10.8 | 658.3 | 658.3 | 658.3 | 0.0 |
| F | 9,252[2] | 127 | 255 | 6.5 | 662.4 | 662.4 | 662.4 | 0.0 |
| G | 9,572[2] | 140 | 310 | 5.4 | 666.2 | 666.2 | 667.2 | 1.0 |

[1]Feet above corporate limits

[2]Feet above confluence with Pequabuck River

[3]Elevation computed without consideration of backwater effects from Pequabuck River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

**TOWN OF PLYMOUTH, CT**
(LITCHFIELD CO.)

**FLOODWAY DATA**

**PEQUABUCK RIVER AND POLAND RIVER**



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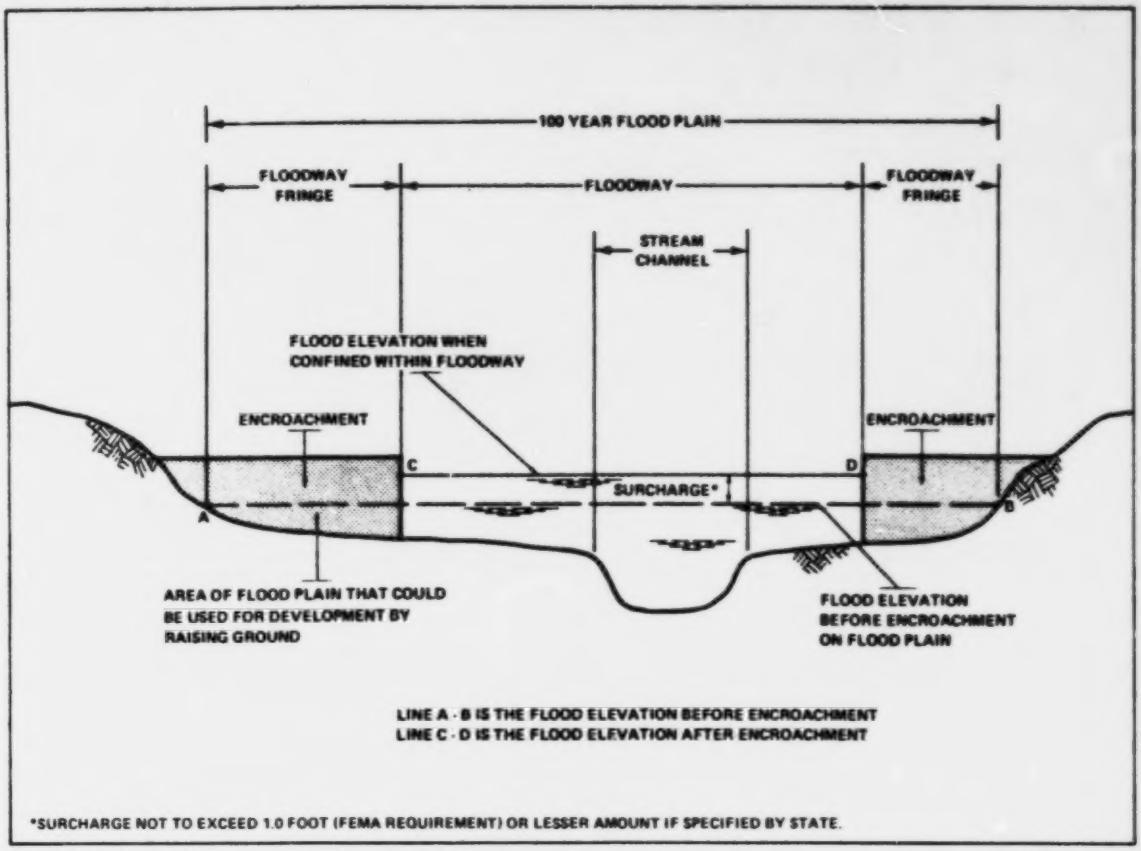
100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

**FLOODWAY SCHEMATIC**

Figure 5

Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Town of Plymouth.

## 5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

| Average Difference Between 10- and 100-Year Floods | Variation |
|---|---|
| Less than 2 feet | 0.5 foot |
| 2 to 7 feet | 1.0 foot |
| 7.1 to 12 feet | 2.0 feet |
| More than 12 feet | 3.0 feet |

The locations of the reaches determined for the flooding sources of the Town of Plymouth are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 3).

| FLOODING SOURCE | PANEL[1] | ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND | | | FHF | ZONE | BASE FLOOD ELEVATION[3] (NGVD) |
|---|---|---|---|---|---|---|---|
| | | 10% (10 YR.) | 2% (50 YR.) | 0.2% (500 YR.) | | | |
| Pequabuck River | | | | | | | |
| Reach 1 | 01,03, 04 | -2.6 | -0.6 | +1.6 | 025 | A5 | Varies |
| Reach 2 | 01 | -1.7 | -0.3 | +0.8 | 015 | A3 | Varies |
| Poland River | | | | | | | |
| Reach 1 | 02,04 | -2.0 | -0.7 | +0.9 | 020 | A4 | Varies |
| Naugatuck River (Area of Flooding Affecting Community) | 01 | -34.8 | -13.0 | +3.0 | 200 | A30 | 496 |

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

**TOWN OF PLYMOUTH, CT**

(LITCHFIELD CO.)

**FLOOD INSURANCE ZONE DATA**

**PEQUABUCK RIVER, POLAND RIVER AND NAUGATUCK RIVER**



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## 5.2 Flood Hazard Factors

The FHF is the FEMA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

## 5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Town of Plymouth was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

| | |
|---|---|
| Zone A: | Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined. |
| Zones A3, A4, A5, and A30: | Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF. |
| Zone B: | Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided. |
| Zone C: | Areas of minimal flooding. |

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the Town of Plymouth.



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### 5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Plymouth is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FEMA.

## 6.0 OTHER STUDIES

Flood Insurance Studies for the Town of Thomaston and the City of Bristol are currently being prepared (References 9 and 11). The results of those studies will be in exact agreement with the results of this study.

Differences exist between this study and the SCS study performed on the Pequabuck River in 1978 (Reference 5). The cross sections used in the SCS study were extended by interpolating from 1958 Connecticut Department of Transportation aerial maps, whereas the cross sections used in this study were taken directly from 1978 aerial photos. This can account for significant differences in channel area and flood profiles.

## 7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region I Office, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

## 8.0 BIBLIOGRAPHY AND REFERENCES


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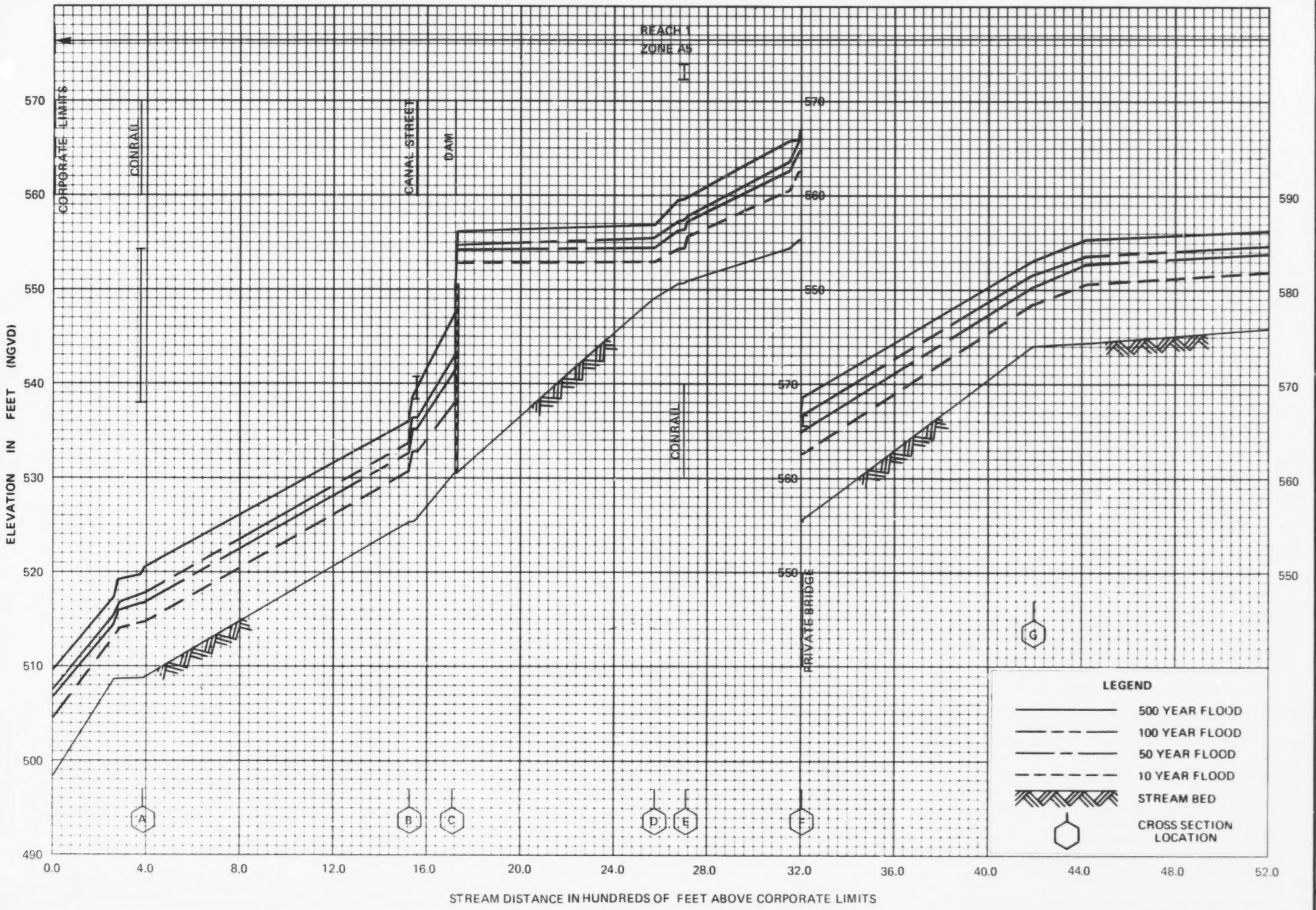


FLOOD PROFILES

PEQUABUCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF PLYMOUTH, CT
(LITCHFIELD CO.)

01P



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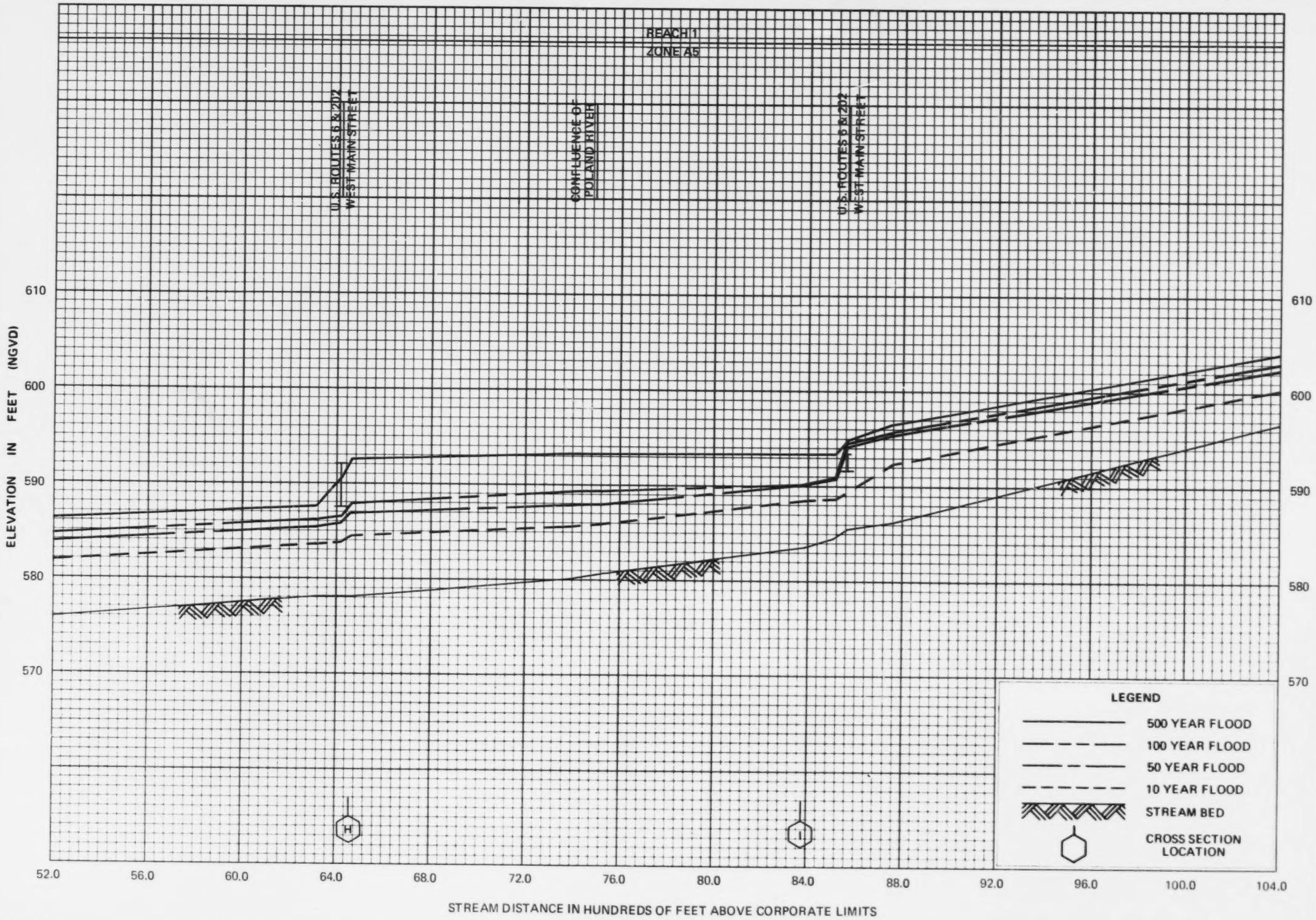


FLOOD PROFILES

PEQUABUCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF PLYMOUTH, CT
(LITCHFIELD CO.)

02P



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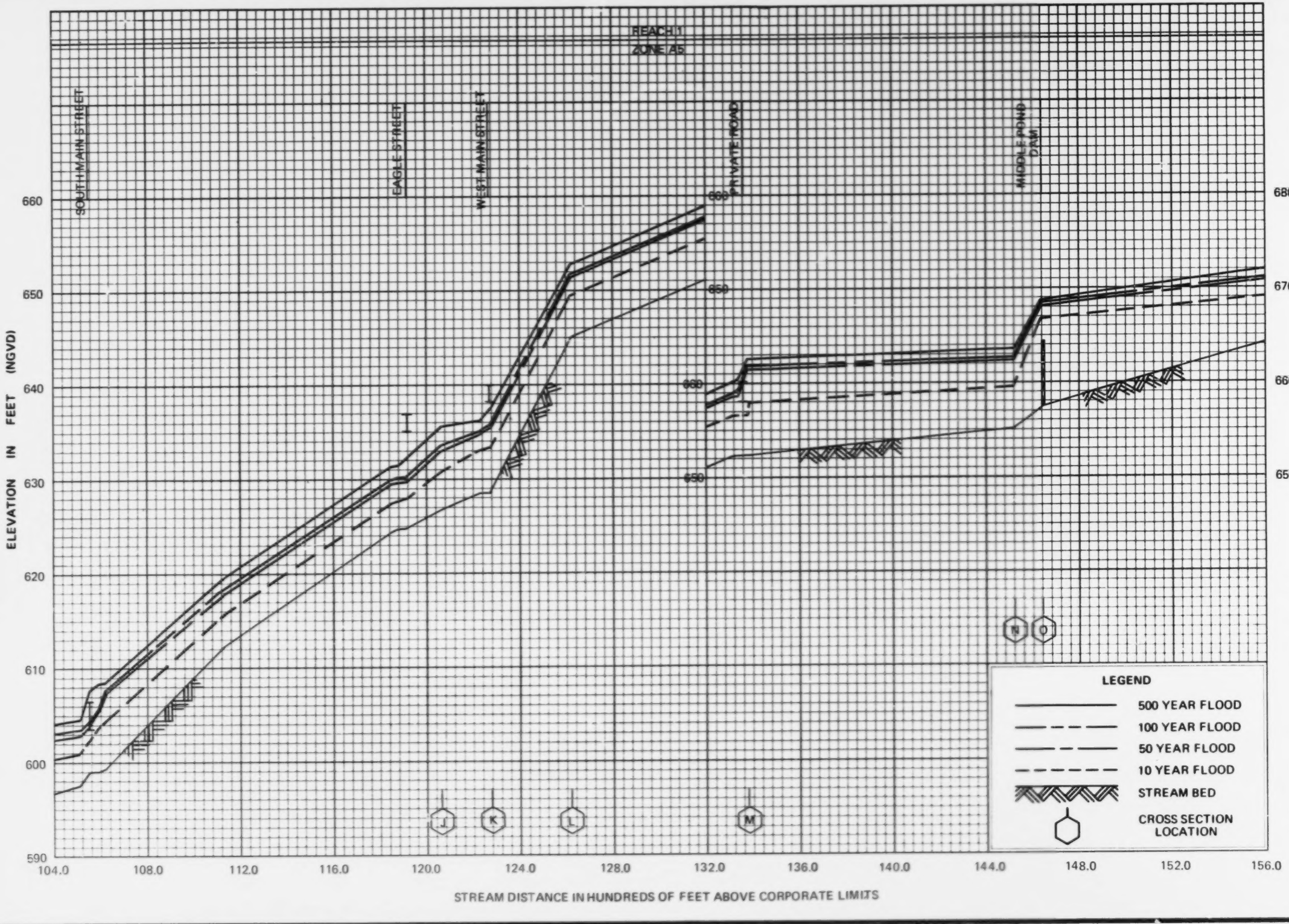


FLOOD PROFILES

PEQUABUCK RIVER

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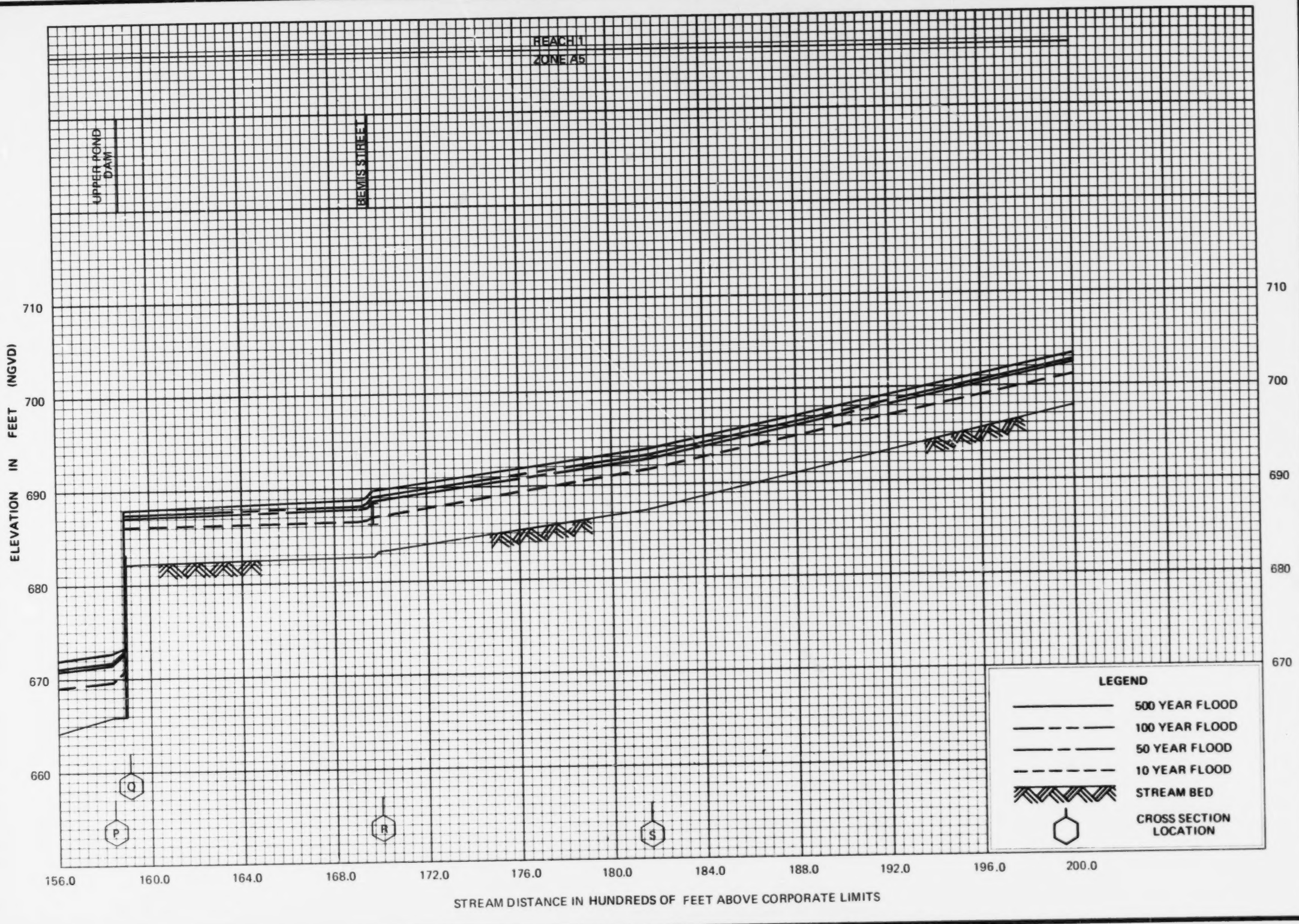


FLOOD PROFILES

PEQUABUCK RIVER

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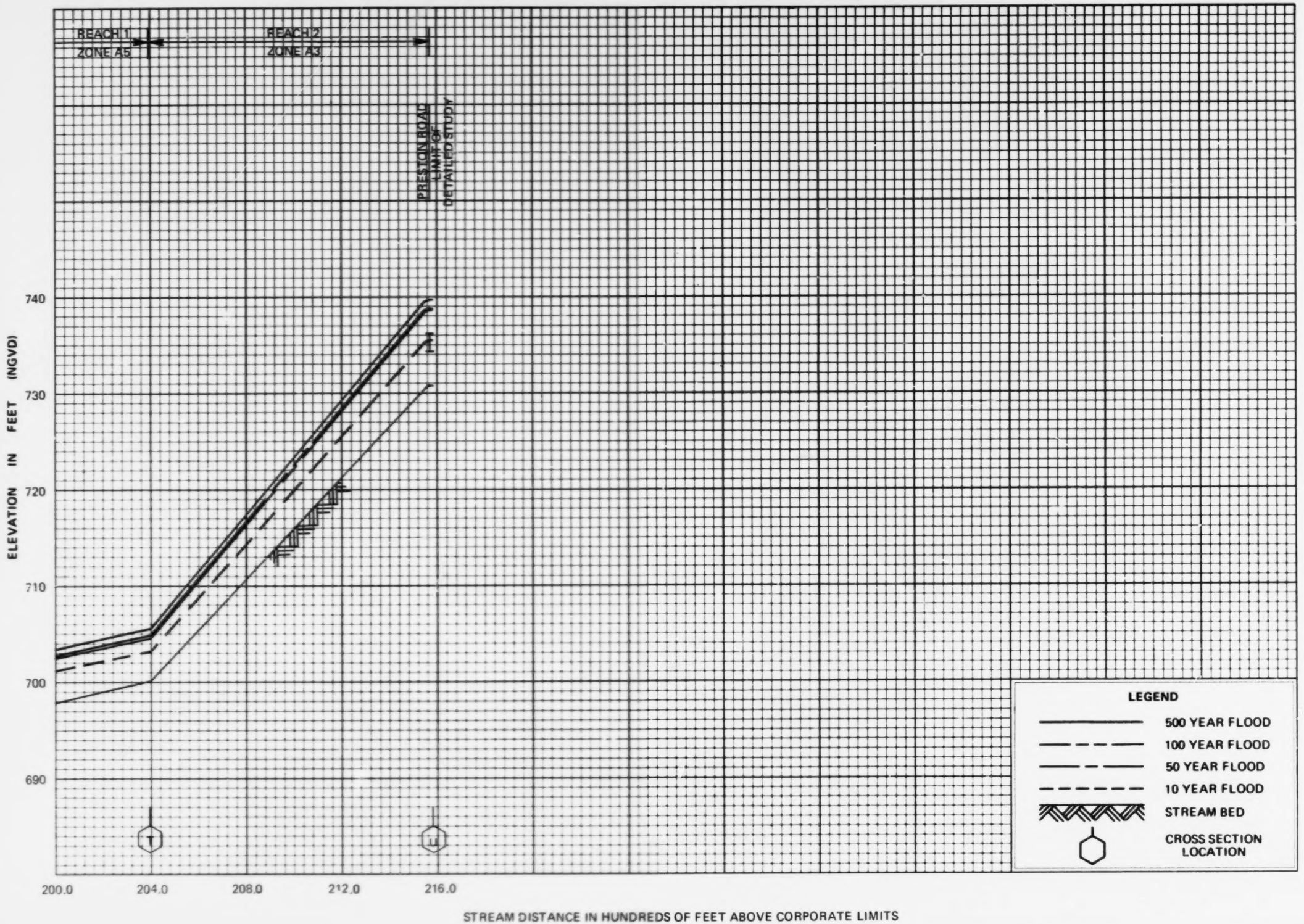


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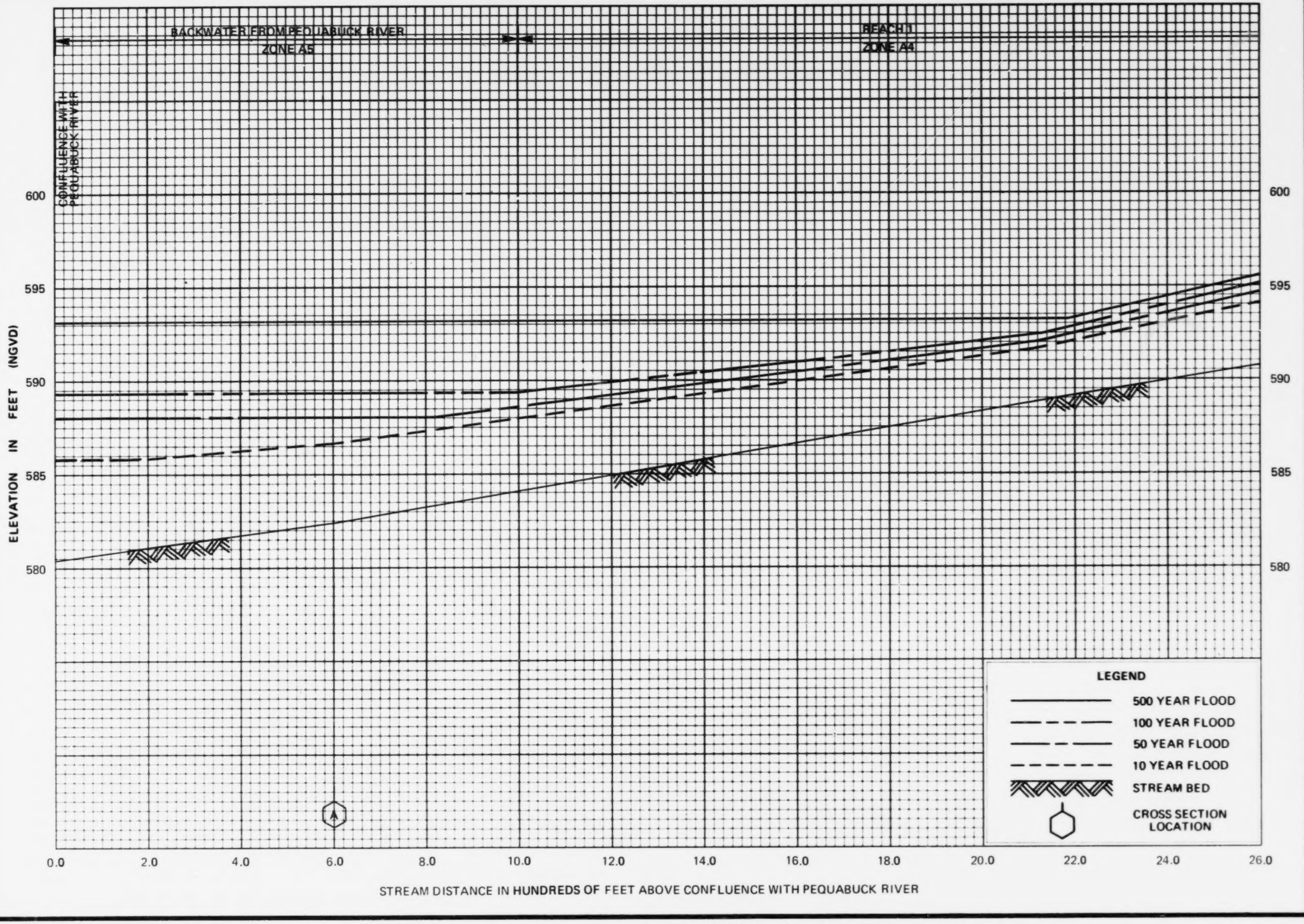


FLOOD PROFILES

POLAND RIVER

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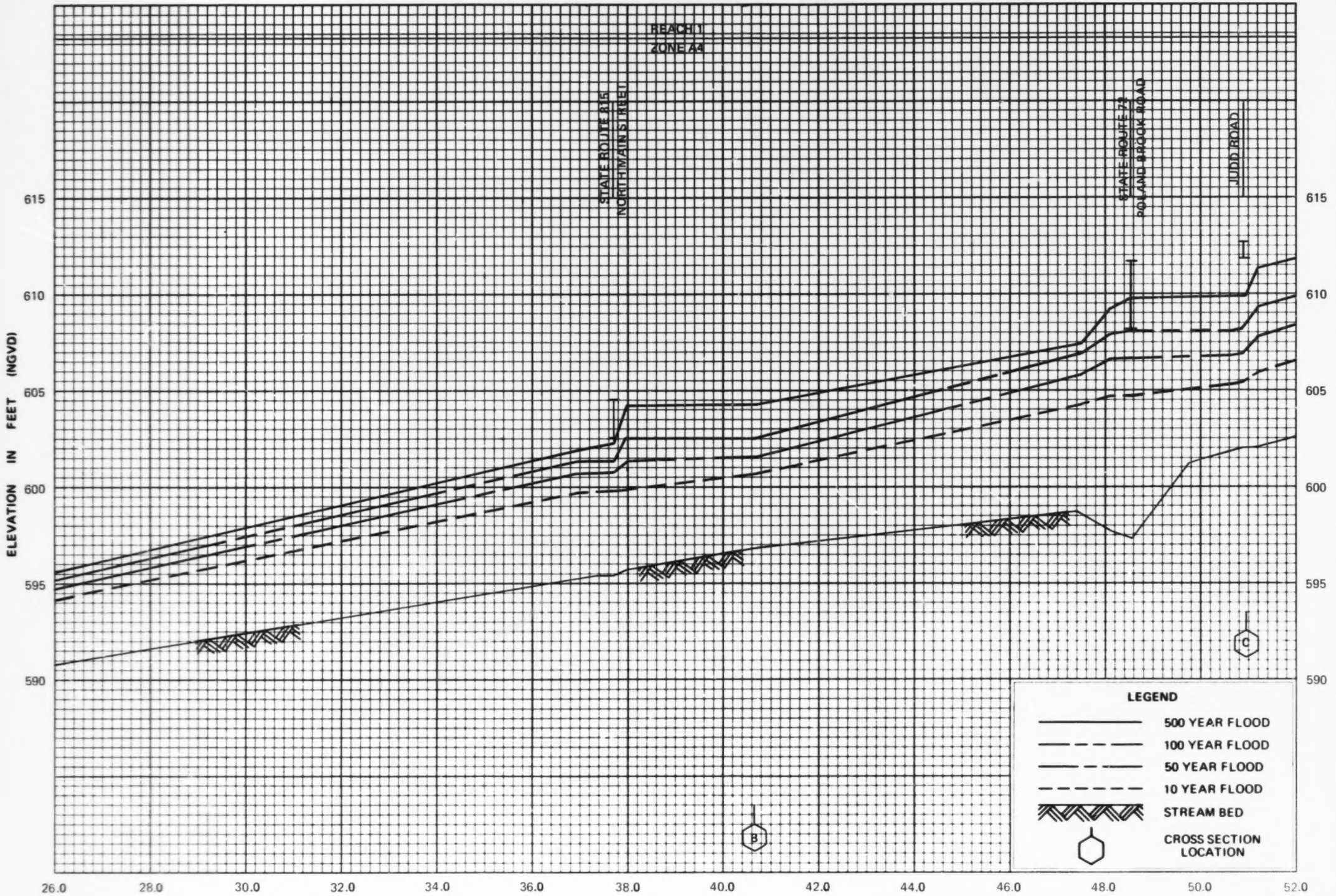


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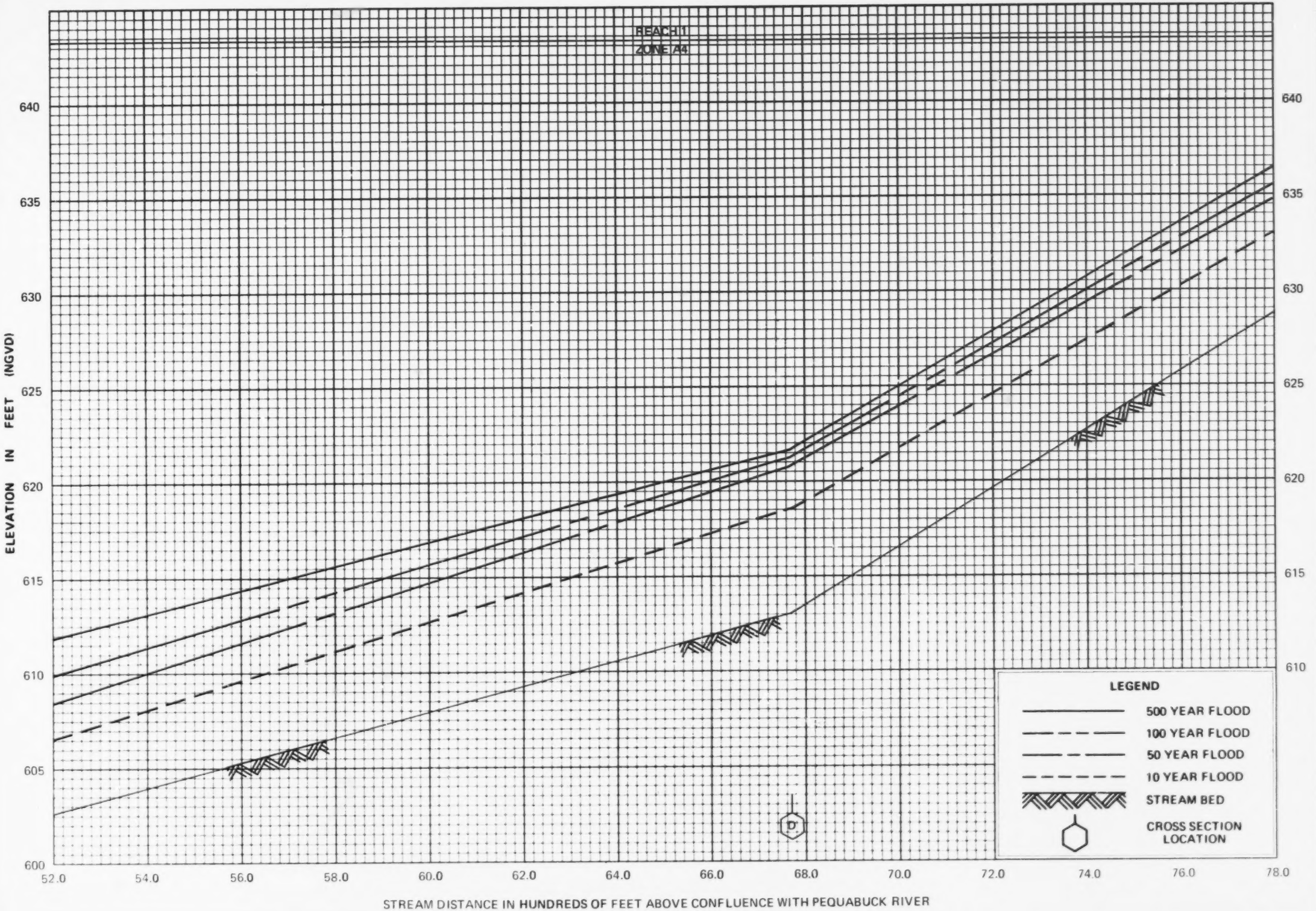


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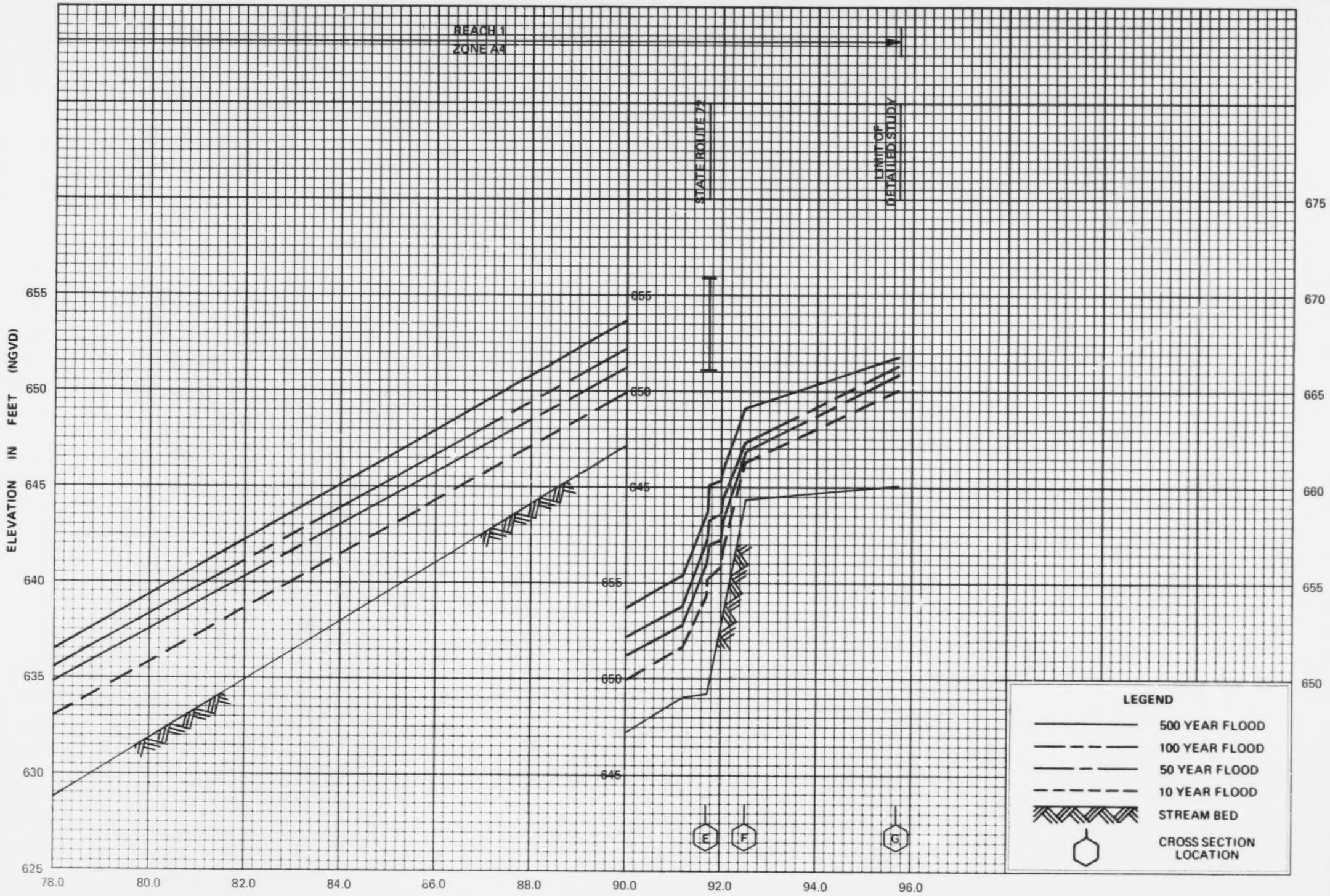


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